

MULTIMEDIA



UNIVERSITY

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# MULTIMEDIA UNIVERSITY

## FINAL EXAMINATION

TRIMESTER 3, 2018/2019

**BFN2104 – CORPORATE FINANCE**  
( All sections / Groups )

29 MAY 2019  
9.00 a.m – 11.00 a.m  
( 2 Hours )

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### INSTRUCTIONS TO STUDENTS

1. This question paper consists of SEVEN (7) printed pages with four (4) questions, financial tables and formula sheet.
2. Attempt **ALL** questions.
3. Please write all your answer in the Answer Booklet provided.
4. Marks are shown at the end of each question.

**STRUCTURED QUESTIONS (100 Marks)**

There are FOUR (4) questions in this section. Candidates MUST answer ALL questions.

**Question 1 (25 Marks)**

(a) Superb Bhd. has 9.3 million shares of common stock outstanding and 260,000 6.8 percent semiannual bonds outstanding, par value RM1,000 each. The common stock currently sells for RM34 per share and has a beta of 1.20, and the bonds have 20 years to maturity and sell for 104 percent of par. The market risk premium is 7 percent, T-bills are yielding 3.5 percent, and Superb Bhd's tax rate is 35 percent.

- i. What is the firm's market value capital structure?

(5 marks)

- ii. If Superb Bhd. is evaluating a new investment project that has the same risk as the firm's typical project, what rate should the firm use to discount the project's cash flows?

(5 marks)

(b) Makcik Nasi Lemak owns three identical restaurants popular for their specialty nasi lemak. Each restaurant has a debt-equity ratio of 40 percent and makes interest payments of RM41,000 at the end of each year. The cost of the firm's levered equity is 19 percent. Each store estimates that annual sales will be RM1.3 million; annual cost of goods sold will be RM670,000; and annual general and administrative costs will be RM405,000. These cash flows are expected to remain the same forever. The corporate tax rate is 40 percent.

- i. Use the flow to equity approach to determine the value of the company's equity.

(10 marks)

- ii. What is the total value of the company?

(5 marks)

Continued...

**Question 2 (25 Marks)**

(a) Security F has an expected return of 10 percent and a standard deviation of 43 percent per year. Security G has an expected return of 15 percent and a standard deviation of 62 percent per year.

- i. What is the expected return on a portfolio composed of 30 percent of Security F and 70 percent of Security G?

**(3 marks)**

- ii. If the correlation between the returns of Security F and Security G is 0.25, what is the standard deviation of the portfolio described in part (a)?

**(4 marks)**

(b) Your portfolio is comprised of 20% of stock A, 70% of stock B, and 10% of stock C. Stock A has a beta of 0.82, stock B has a beta of 1.62, and stock C has a beta of 1.08. What is the beta of your portfolio?

**(4 marks)**

(c) Mulia Bhd has been a hot stock the last few years, but is risky. The expected returns for Mulia Bhd are highly dependent on the state of the economy as follows. Compute the expected return based on the data given in Table A.

**Table A:**

<b>State of Economy</b>	<b>Probability</b>	<b>Mulia Bhd's Returns</b>
Depression	0.05	-50%
Recession	0.1	-15%
Mild slowdown	0.2	5%
Normal	0.3	15%
Broad Expansion	0.2	25%
Strong Expansion	0.15	40%

**(5 marks)**

**Continued...**

- (d) Suppose the expected returns and standard deviations of Stocks A and B are  $E(R_A) = 0.09$ ,  $E(R_B) = 0.15$ ,  $\sigma_A = 0.36$ , and  $\sigma_B = 0.62$ .

Calculate the expected return and standard deviation of a portfolio that is composed of 35 percent A and 65 percent B when the correlation between the returns on A and B is 0.5.

(9 marks)

### Question 3 (25 Marks)

- (a) Levered Bhd., and Unlevered, Bhd., are identical in every way except their capital structures. Each company expects to earn RM23 million before interest per year in perpetuity, with each company distributing all its earnings as dividends. Levered's perpetual debt has a market value of RM73 million and costs 8 percent per year. Levered has 2.1 million shares outstanding, currently worth RM105 per share. Unlevered has no debt and 4.5 million shares outstanding, currently worth RM78 per share. Neither firm pays taxes. Is Levered's stock a better buy than Unlevered's stock? Please justify your answer with detailed analysis.

(12 marks)

- (b) Your portfolio has a beta of 1.18. The portfolio consists of 15% U.S. Treasury bills, 30% in stock A, and 55% in stock B. The beta of a risk-free asset is zero. The beta of the market is 1.0. Stock A has a risk-level equivalent to that of the overall market. What is the beta of stock B?

(5 marks)

- (c) Rolston Corporation is comparing two different capital structures, an all-equity plan (Plan I) and a levered plan (Plan II). Under Plan I, Rolston would have 265,000 shares of stock outstanding. Under Plan II, there would be 185,000 shares of stock outstanding and RM2.8 million in debt outstanding. The interest rate on the debt is 10 percent and there are no taxes.

- i. If EBIT is RM750,000, which plan will result in the higher EPS?

(4 marks)

- ii. If EBIT is RM1,500,000, which plan will result in the higher EPS?

(4 marks)

Continued...

**Question 4 (25 Marks)**

(a) Consider the following financial statement information for the Cerdik Bhd.:

	Beginning	Ending
Inventory	RM17,385	RM19,108
Accounts receivable	13,182	13,973
Accounts payable	15,385	16,676
Net sales	RM216,384	
Cost of goods sold	165,763	

- i. Compute the company's average age of inventory (AAI). (5 marks)
- ii. Compute the company's average collection period (ACP). (5 marks)
- iii. Calculate the operating cycle (OC) and cash cycles. How do you interpret your answer? (10 marks)

(b) In working capital management, there are some actions that increase or decrease cash. What are some of the items that *increase* the cash account, respectively?

**(5 marks)**

**End of Page**

Present Value and Future Value Tables

Table A-1 Future Value Interest Factors for One Dollar Compounded at  $k$  Percent for  $n$  Periods:  $FVIF_{k,n} = (1 + k)^n$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	20%	24%	25%	30%
1	1.0100	1.0200	1.0300	1.0400	1.0500	1.0600	1.0700	1.0800	1.0900	1.1000	1.1100	1.1200	1.1300	1.1400	1.1500	1.1600	1.2000	1.2400	1.2500	1.3000
2	1.0201	1.0404	1.0609	1.0816	1.1025	1.1236	1.1449	1.1664	1.1881	1.2100	1.2321	1.2544	1.2769	1.2996	1.3225	1.3456	1.4400	1.5376	1.5625	1.6900
3	1.0303	1.0612	1.0927	1.1249	1.1576	1.1910	1.2250	1.2597	1.2950	1.3310	1.3676	1.4049	1.4429	1.4815	1.5209	1.5609	1.7280	1.9066	1.9531	2.1970
4	1.0406	1.0824	1.1255	1.1699	1.2155	1.2625	1.3108	1.3605	1.4116	1.4641	1.5181	1.5735	1.6305	1.6890	1.7490	1.8106	2.0736	2.3642	2.4414	2.8581
5	1.0510	1.1041	1.1593	1.2167	1.2763	1.3382	1.4026	1.4693	1.5386	1.6105	1.6851	1.7623	1.8424	1.9254	2.0114	2.1003	2.4883	2.9316	3.0518	3.7129
6	1.0615	1.1262	1.1941	1.2653	1.3401	1.4185	1.5007	1.5869	1.6771	1.7715	1.8704	1.9738	2.0820	2.1950	2.3131	2.4364	2.9860	3.6352	3.8147	4.8268
7	1.0721	1.1487	1.2299	1.3169	1.4071	1.5036	1.6058	1.7138	1.8280	1.9487	2.0762	2.2107	2.3528	2.5023	2.6500	2.8262	3.5832	4.5077	4.7884	6.2749
8	1.0828	1.1717	1.2668	1.3686	1.4775	1.5938	1.7182	1.8509	1.9926	2.1436	2.3045	2.4780	2.6584	2.8526	3.0590	3.2784	4.2998	5.5585	8.1573	8.1573
9	1.0937	1.1951	1.3048	1.4233	1.5513	1.6895	1.8385	1.9990	2.1719	2.3579	2.5580	2.7731	3.0040	3.2619	3.5179	3.8030	5.1598	6.9310	7.4506	10.604
10	1.1046	1.2190	1.3438	1.4802	1.6289	1.7908	1.9672	2.1588	2.3674	2.5937	2.8394	3.1058	3.3946	3.7072	4.0456	4.4114	6.1917	8.5944	9.3132	13.786
11	1.1157	1.2434	1.3842	1.5395	1.7103	1.8983	2.1049	2.3316	2.5804	2.8531	3.1518	3.4785	3.8359	4.2262	4.6524	5.1173	7.4301	10.657	11.642	17.922
12	1.1268	1.2682	1.4258	1.6010	1.7958	2.0122	2.2522	2.5182	2.8127	3.1384	3.4985	3.8960	4.3345	4.8179	5.3503	5.9380	8.9161	13.215	14.552	23.298
13	1.1381	1.2936	1.4685	1.6651	1.8858	2.1329	2.4098	2.7195	3.0658	3.4523	3.8833	4.3635	4.8980	5.4924	6.1528	6.8858	10.699	16.388	18.190	30.288
14	1.1495	1.3195	1.5126	1.7317	1.9798	2.2609	2.5785	2.9372	3.3417	3.7975	4.3104	4.8871	5.5348	6.2813	7.0757	7.9875	12.839	20.319	22.737	39.374
15	1.1610	1.3459	1.5580	1.8009	2.0788	2.3966	2.7590	3.1722	3.6425	4.1772	4.7845	5.4736	6.2543	7.1379	8.1371	9.2655	15.407	25.196	28.422	51.196
16	1.1726	1.3728	1.6047	1.8730	2.1829	2.5404	2.9522	3.4259	3.9703	4.5950	5.3109	6.1304	7.0673	8.1372	9.3578	10.748	16.488	31.243	35.527	66.542
17	1.1843	1.4002	1.6528	1.9479	2.2920	2.6928	3.1488	3.7000	4.3276	5.0545	5.8651	6.8660	7.9861	9.2785	10.761	12.488	22.186	38.741	44.409	86.504
18	1.1961	1.4282	1.7024	2.0258	2.4066	2.8543	3.3798	3.9860	4.7171	5.5599	6.5436	7.6900	9.0243	10.575	12.375	14.453	26.823	48.039	55.511	112.455
19	1.2081	1.4568	1.7536	2.1088	2.5270	3.0256	3.6165	4.3157	5.1417	6.1169	7.2633	8.6128	10.197	12.056	14.232	16.777	31.948	59.568	69.389	146.192
20	1.2202	1.4859	1.8081	2.1911	2.6533	3.2071	3.8697	4.6610	5.6044	6.7275	8.0623	9.6463	11.523	13.743	16.367	19.461	38.338	73.864	86.736	180.050
21	1.2324	1.5157	1.8803	2.2788	2.7860	3.3986	4.1408	5.0338	6.1088	7.4002	8.9492	10.804	13.021	15.868	18.822	22.574	46.005	81.592	108.420	247.085
22	1.2447	1.5450	1.9161	2.3659	2.9253	3.6035	4.4304	5.4365	6.6588	8.1403	9.9338	12.100	14.714	17.861	21.645	26.186	55.206	113.574	135.525	321.184
23	1.2572	1.5769	1.9796	2.4647	3.0715	3.8197	4.7405	5.8715	7.2579	8.9543	11.026	13.552	16.627	20.362	24.891	30.375	66.247	140.831	169.407	417.539
24	1.2697	1.6084	2.0328	2.5633	3.2251	4.0488	5.0724	6.3412	7.9111	9.8497	12.239	15.178	18.788	23.212	28.625	35.236	79.497	174.631	211.756	542.801
25	1.2824	1.6405	2.0938	2.8658	3.3864	4.2919	5.4274	6.8485	8.6231	10.835	13.585	17.000	21.231	26.462	32.919	40.874	95.398	218.542	264.698	705.641
30	1.3478	1.8114	2.4273	3.2434	4.3219	5.7435	7.6123	10.083	13.268	17.448	22.882	28.980	39.116	50.950	68.212	85.850	227.376	334.820	407.794	*
35	1.4166	1.9959	2.8139	3.9461	5.5160	7.8881	10.677	14.785	20.414	28.102	38.578	52.800	72.069	98.100	133.176	180.314	590.668	*	*	*
36	1.4308	2.0359	2.8983	4.1039	5.7918	8.1473	11.424	15.968	22.251	30.913	42.818	59.138	81.437	111.634	153.152	209.164	708.802	*	*	*
40	1.4889	2.2080	3.2620	4.8010	7.0400	10.286	14.874	21.725	31.409	45.259	65.001	93.051	132.782	188.864	267.854	378.721	*	*	*	
50	1.6446	2.8916	4.3839	7.1067	11.467	18.420	29.457	46.902	74.368	117.391	184.565	289.002	450.736	700.233	*	*	*	*	*	*

Table A-2 Future Value Interest Factors for a One-Dollar Annuity Compounded at  $k$  Percent for  $n$  Periods:  $FVIFA_{k,n} = [(1 + k)^n - 1] / k$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	20%	24%	25%	30%
1	1.0000	1.0200	1.0300	1.0400	1.0500	1.0600	1.0700	1.0800	1.0900	1.1000	1.1100	1.1200	1.1300	1.1400	1.1500	1.1600	1.2000	1.2400	1.2500	1.3000
2	2.0100	2.0200	2.0300	2.0400	2.0500	2.0600	2.0700	2.0800	2.0900	2.1000	2.1100	2.1200	2.1300	2.1400	2.1500	2.1600	2.2000	2.2400	2.2500	2.3000
3	3.0301	3.0604	3.0908	3.1216	3.1526	3.1836	3.2149	3.2464	3.2781	3.3100	3.3421	3.3744	3.4069	3.4398	3.4725	3.5058	3.6400	3.7778	3.8125	3.9900
4	4.0604	4.1216	4.1836	4.2455	4.3101	4.3746	4.4399	4.5091	4.5731	4.6410	4.7097	4.7793	4.8498	4.9211	4.9934	5.0665	5.3580	5.6842	5.7856	6.1870
5	5.1010	5.2040	5.3091	5.4183	5.6256	5.6371	5.7507	5.8666	5.9847	6.1051	6.2278	6.3628	6.4803	6.6101	6.7424	6.8771	7.4416	8.0484	8.2070	9.0431
6	6.1520	6.3081	6.4684	6.6330	6.8019	6.9753	7.1533	7.3359	7.5233	7.7156	7.9128	8.1152	8.3227	8.5355	8.7537	8.9775	9.2288	10.880	11.259	12.756
7	7.2135	7.4343	7.6525	7.8883	8.1420	8.3858	8.6540	8.9228	9.2004	9.4872	9.7833	10.088	10.405	10.731	11.057	11.414	12.916	14.615	15.073	17.583
8	8.2857	8.5830	8.8923	9.2142	9.5491	9.8975	10.260	10.6537	11.028	11.436	11.859	12.300	12.757	13.233	13.727	14.240	16.499	19.123	19.842	23.858
9	9.3685	9.7546	10.158	10.583	11.027	11.491	11.978	12.488	13.021	13.579	14.164	14.776	15.416	16.085	16.786	17.519	20.799	24.712	25.802	32.015
10	10.462	10.950	11.464	12.006	12.578	13.181	13.816	14.487	15.193	15.937	16.722	17.549	18.420	19.337	20.304	21.321	25.559	31.643	33.253	42.618
11	11.567	12.169	12.808	13.485	14.207	14.972	15.784	16.645	17.560	18.531	19.561	20.655	21.814	23.045	24.348	25.733	32.150	40.238	42.566	56.405
12	12.683	13.412	14.192	15.026	15.917	16.870	17.885	18.977	20.147	21.384	22.713	24.133	25.650	27.271	29.002	30.850	39.581	50.895	54.208	74.327
13	13.809	14.680	15.618	16.627	17.713	18.822	20.141	21.495	22.953	24.523	26.212	28.029	29.985	32.089	34.352	36.786	46.497	54.110	66.760	97.253
14	14.947	15.974	17.088	18.292	18.598	21.015	22.550													

Present Value and Future Value Tables

Table A-3 Present Value Interest Factors for One Dollar Discounted at  $k$  Percent for  $n$  Periods:  $PVIF_{k,n} = 1 / (1 + k)^n$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	20%	24%	25%	30%
1	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091	0.9009	0.8929	0.8850	0.8772	0.8696	0.8621	0.8333	0.8065	0.8000	0.7692
2	0.9803	0.9612	0.9426	0.9246	0.9070	0.8900	0.8734	0.8573	0.8417	0.8264	0.8116	0.7972	0.7831	0.7695	0.7561	0.7432	0.6944	0.6504	0.6400	0.5917
3	0.9706	0.9423	0.9151	0.8890	0.8638	0.8396	0.8163	0.7938	0.7722	0.7513	0.7312	0.7118	0.6931	0.6750	0.6575	0.6407	0.5787	0.5245	0.5120	0.4552
4	0.9610	0.9238	0.8885	0.8548	0.8227	0.7921	0.7629	0.7350	0.7084	0.6830	0.6587	0.6355	0.6133	0.5921	0.5718	0.5523	0.4823	0.4230	0.4095	0.3501
5	0.9515	0.9057	0.8626	0.8219	0.7835	0.7473	0.7139	0.6806	0.6499	0.6209	0.5935	0.5674	0.5428	0.5194	0.4972	0.4761	0.4019	0.3411	0.3277	0.2693
6	0.9420	0.8880	0.8375	0.7903	0.7462	0.7050	0.6663	0.6302	0.5963	0.5645	0.5348	0.5066	0.4803	0.4556	0.4323	0.4104	0.3349	0.2751	0.2621	0.2072
7	0.9327	0.8706	0.8131	0.7599	0.7107	0.6651	0.6227	0.5835	0.5470	0.5132	0.4817	0.4523	0.4251	0.3996	0.3759	0.3538	0.2791	0.2218	0.2097	0.1594
8	0.9235	0.8535	0.7894	0.7307	0.6768	0.6274	0.5820	0.5403	0.5019	0.4665	0.4339	0.4039	0.3762	0.3506	0.3269	0.3050	0.2328	0.1789	0.1678	0.1226
9	0.9143	0.8368	0.7664	0.7026	0.6448	0.5919	0.5439	0.5002	0.4604	0.4241	0.3909	0.3606	0.3329	0.3075	0.2843	0.2630	0.1938	0.1443	0.1342	0.0943
10	0.9053	0.8203	0.7441	0.6756	0.6139	0.5584	0.5083	0.4632	0.4224	0.3885	0.3522	0.3220	0.2948	0.2697	0.2472	0.2267	0.1615	0.1164	0.1074	0.0725
11	0.8963	0.8043	0.7224	0.6496	0.5847	0.5268	0.4751	0.4289	0.3875	0.3505	0.3173	0.2875	0.2507	0.2368	0.2149	0.1954	0.1346	0.0938	0.0869	0.0658
12	0.8874	0.7885	0.7014	0.6246	0.5568	0.4970	0.4440	0.3971	0.3555	0.3186	0.2858	0.2567	0.2307	0.2076	0.1869	0.1685	0.1122	0.0757	0.0687	0.0429
13	0.8787	0.7730	0.6810	0.6008	0.5303	0.4688	0.4150	0.3677	0.3262	0.2897	0.2575	0.2292	0.2042	0.1821	0.1625	0.1452	0.0935	0.0610	0.0550	0.0330
14	0.8700	0.7579	0.6511	0.5775	0.5051	0.4423	0.3878	0.3405	0.2992	0.2633	0.2320	0.2046	0.1807	0.1597	0.1413	0.1252	0.0779	0.0492	0.0440	0.0254
15	0.8613	0.7430	0.6419	0.5553	0.4810	0.4173	0.3624	0.3152	0.2745	0.2384	0.2090	0.1827	0.1599	0.1401	0.1229	0.1078	0.0649	0.0397	0.0352	0.0195
16	0.8528	0.7284	0.6232	0.5338	0.4581	0.3836	0.3387	0.2918	0.2519	0.2178	0.1883	0.1631	0.1415	0.1228	0.1069	0.0930	0.0541	0.0320	0.0281	0.0150
17	0.8444	0.7142	0.6050	0.5134	0.4363	0.3714	0.3168	0.2703	0.2311	0.1978	0.1699	0.1468	0.1252	0.1078	0.0929	0.0802	0.0451	0.0256	0.0228	0.0118
18	0.8360	0.7002	0.5874	0.4936	0.4155	0.3503	0.2959	0.2502	0.2120	0.1799	0.1528	0.1300	0.1108	0.0846	0.0808	0.0691	0.0376	0.0208	0.0180	0.0089
19	0.8277	0.6864	0.5703	0.4746	0.3957	0.3305	0.2765	0.2317	0.1945	0.1635	0.1377	0.1161	0.0981	0.0829	0.0703	0.0566	0.0313	0.0168	0.0144	0.0088
20	0.8195	0.6730	0.5537	0.4584	0.3769	0.3118	0.2584	0.2145	0.1784	0.1486	0.1240	0.1037	0.0868	0.0728	0.0611	0.0514	0.0281	0.0135	0.0115	0.0053
21	0.8114	0.6558	0.5375	0.4388	0.3589	0.2942	0.2415	0.1987	0.1637	0.1351	0.1117	0.0926	0.0768	0.0638	0.0531	0.0443	0.0217	0.0109	0.0092	0.0040
22	0.8034	0.6458	0.5219	0.4220	0.3418	0.2775	0.2257	0.1839	0.1502	0.1228	0.1007	0.0826	0.0680	0.0580	0.0482	0.0382	0.0181	0.0088	0.0074	0.0031
23	0.7954	0.6342	0.5067	0.4057	0.3256	0.2618	0.2109	0.1703	0.1378	0.1117	0.0907	0.0738	0.0601	0.0491	0.0402	0.0329	0.0151	0.0071	0.0059	0.0024
24	0.7876	0.6217	0.4919	0.3891	0.3101	0.2479	0.1971	0.1577	0.1264	0.1015	0.0817	0.0659	0.0532	0.0421	0.0349	0.0284	0.0126	0.0057	0.0047	0.0018
25	0.7798	0.6095	0.4776	0.3751	0.2983	0.2330	0.1842	0.1460	0.1160	0.0923	0.0738	0.0588	0.0471	0.0378	0.0304	0.0245	0.0105	0.0046	0.0038	0.0014
30	0.7419	0.5521	0.4120	0.3083	0.2214	0.1741	0.1314	0.0984	0.0754	0.0573	0.0437	0.0334	0.0256	0.0196	0.0151	0.0116	0.0042	0.0016	0.0012	*
35	0.7059	0.5000	0.3554	0.2534	0.1813	0.1301	0.0837	0.0678	0.0490	0.0356	0.0269	0.0188	0.0138	0.0102	0.0075	0.0055	0.0017	0.0005	*	*
36	0.6989	0.4902	0.3450	0.2437	0.1727	0.1227	0.0875	0.0626	0.0449	0.0323	0.0234	0.0169	0.0123	0.0089	0.0065	0.0048	0.0014	*	*	*
40	0.6717	0.4529	0.3068	0.2083	0.1420	0.0972	0.0688	0.0480	0.0318	0.0221	0.0154	0.0107	0.0075	0.0053	0.0037	0.0026	0.0007	*	*	*
50	0.6080	0.3716	0.2281	0.1407	0.0872	0.0543	0.0339	0.0213	0.0134	0.0085	0.0054	0.0035	0.0022	0.0014	0.0009	0.0005	*	*	*	*

Table A-4 Present Value Interest Factors for a One-Dollar Annuity Discounted at  $k$  Percent for  $n$  Periods:  $PVIFA = [1 - 1/(1 + k)^n] / k$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	20%	24%	25%	30%
1	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091	0.9009	0.8929	0.8850	0.8772	0.8696	0.8621	0.8333	0.8065	0.8000	0.7692
2	1.8704	1.8416	1.8135	1.7881	1.8594	1.8334	1.8080	1.7833	1.7591	1.7355	1.7125	1.6901	1.6681	1.6467	1.6257	1.6082	1.5728	1.4688	1.4400	1.3609
3	2.9410	2.8839	2.8286	2.7751	2.7232	2.6730	2.6243	2.5771	2.5313	2.4869	2.4437	2.4018	2.3612	2.3216	2.2852	2.2459	2.1065	1.9813	1.9520	1.8161
4	3.9020	3.8077	3.7171	3.8299	3.5480	3.4851	3.3872	3.3121	3.2397	3.1688	3.1024	3.0373	2.9748	2.9137	2.8550	2.7982	2.5887	2.4043	2.3516	2.1652
5	4.8534	4.7135	4.5797	4.4518	4.3295	4.2124	4.1002	3.9927	3.8897	3.7908	3.6959	3.6048	3.5172	3.4331	3.3522	3.2743	2.9906	2.7454	2.6893	2.4356
6	5.7955	5.6014	5.4172	5.2421	5.0757	4.9173	4.7665	4.6229	4.4859	4.3553	4.2305	4.1114	3.9975	3.8887	3.7845	3.6847	3.3255	3.0205	2.9514	2.6427
7	6.7282	6.4720	6.2303	6.0021	5.7864	5.5824	5.3893	5.2064	5.0330	4.8684	4.7122	4.5638	4.4248	4.2883	4.1604	4.0385	3.6045	3.2423	3.1611	2.8021
8	7.6517	7.3255	7.0197	6.7327	6.4632	6.2098	5.9713	5.7485	5.5348	5.3349	5.1461	4.9676	4.7988	4.5389	4.4673	4.3436	3.8372	3.4212	3.2847	
9	8.5880	8.1622	7.7861	7.4353	7.1078	6.8017	6.5152	6.2468	5.9852	5.7590	5.5370	5.3282	5.1317	4.9464	4.7716	4.6085	4.0310	3.5655	3.4631	3.0190
10	9.4713	8.9826	8.5302	8.1109	7.7217	7.3601	7.0236	6.7101	6.4177	6.1446	5.8892	5.6502	5.4282	5.2161	5.0188	4.8132	4.1925	3.6819	3.5705	3.0915
11	10.368	9.7868	9.2526	8.7805	8.3064	7.8869	7.4987	7.1390	6.8052	6.4951	6.2065	5.9377	5.6689	5.4627	5.2337	5.0285	4.3271	3.7757	3.6584	3.1473
12	11.255	10.575	9.9640	9.3851	8.8633	8.3838	7.9427	7.5361	7.1807	6.8137	6.4924	6.1944	5.9176	5.6603	5.4206	5.1971	4.4392	3.8514	3.7251	3.1903
13	12.134	11.348	10.8335	9.8855	9.3936	8.8527	8.3577	7.9038	7.4869	7.1024	6.7499	6.4235	6.1218	5.8424	5.5531	5.3423	5.1224	3.7801	3.2233	
14	13.004	12.106	11.296	10.563	9.8966	9.2950	8.7455	8.2442	7											

## Standard List of Formulas

$$\text{COV}_{ab} = \sum (r_a - \bar{r}_a)(r_b - \bar{r}_b) \times P_r$$

$$\rho = \frac{\text{COV}_{a,b}}{\sigma_a \sigma_b}$$

$$\sigma_p^2 = w_a^2 \sigma_a^2 + w_b^2 \sigma_b^2 + 2(w_a \sigma_a w_b \sigma_b) \rho_{ab}$$

$$\beta_i = \frac{\sigma_{im}}{\sigma_m^2}$$

$$\beta_E = \beta_A(1 + \frac{D}{E})$$

$$B_0 = I \times \left[ \sum_{t=1}^n \frac{1}{(1+r_d)^t} \right] + M \times \left[ \frac{1}{(1+r_d)^n} \right]$$

$$r_n = \frac{D_1}{N_n} + g$$

$$r_d = \frac{\frac{I + \frac{\$1000 - N_d}{n}}{N_d + \$1000}}{2}$$